

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
101			JOB		FORTRAN COMPILER -- ARITH PHASE FOUR -- PHASE 36								
102			CTL		6611								
103			*										
104			*		STRINGS GENERATED BY ARITH PHASE TWO ARE OPTIMIZED TO REDUCE								
105			*		THE NUMBER OF TEMPORARY STORAGE AREAS FOR EACH STATEMENT.								
106			*										
107			*		ON ENTRY, X1 IS THE TOP OF THE TOPMOST STATEMENT IN LOW CORE								
108			*		THAT IS NEITHER AN ASSIGNMENT NOR IF STATEMENT, X2 IS THE TOP								
109			*		OF THE TOPMOST STATEMENT IN HIGH CORE THAT IS NEITHER AN								
110			*		ASSIGNMENT NOR IF STATEMENT, X3 IS THE TOP OF THE PREFIX OF								
111			*		THE TOPMOST STATEMENT IN HIGH COORE THAT IS EITHER AN								
112			*		ASSIGNMENT OR IF STATEMENT, AND 81-83 IS THE GMWM ABOVE THE								
113			*		TOPMOST STATEMENT IN HIGH CORE.								
114			*										
115			*		EXCEPT FOR THE LOAD AND CLEAR MACROS, AND GENERATING AN								
116			*		INSTRUCTION TO BRANCH TO ARITF INSTEAD OF @B700@, THIS IS GARY								
117			*		MOKOTOFF'S ORIGINAL V3M0 CODE.								
118			*										
119			X1	EQU	89			0089					
120			X2	EQU	94			0094					
121			X3	EQU	99			0099					
122			*										
123			*		STUFF IN THE RESIDENT AREA								
124			*										
125			SAWNEG	EQU	123 SAW NEGATION OPERATOR (UNARY MINUS) IF NO WM			0123					
126			XNEGTF	EQU	SAWNEG			0123					
127			*										
128				EXT00	SNAPSH, LOADNX, CDOVLY					MACRO			
129			SNAPSH	EQU	333			0333		GEN			
130			PHASLD	EQU	381			0381		GEN			
131			SNAPEX	EQU	564			0564		GEN			
132			LOADNX	EQU	700 CARD OVERLAY UNLESS NOP			0700		GEN			
133			CDOVLY	EQU	700 1 IF LOADING FROM CARDS, N IF FROM TAPE			0700		GEN			
134			TPREAD	EQU	704 LOAD OVERLAY FROM TAPE			0704		GEN			
135			TPERR	EQU	728			0728		GEN			
136			*										
137				EXT03	START, TOP OF PHASE 3					MACRO			
138			BEGIN3	EQU	838			0838		GEN			
139			TOP3	EQU	2600			2600		GEN			
140			*										
141			110	DCW	@ARITH FOR@	9	0110				1		
142			*										
143			*		LOAD THIS BLOCK AND THE NEXT ONE								
144			*										
145			PHAS36	LDPH	ARITH FOR,LOADAD,LOADNX,,,36.1 WVS					MACRO			
			*	PHAZ	LDPH [PHASID],LOADAD,ENTAD[,SKIPFG,SKIP],[NUMBER][,HALT]					GEN			
			*	XFR	PHASZ PROHIBITED IN A MACRO					GEN			
			*							GEN			
			*		LOAD A BLOCK					GEN			
			*							GEN			

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
146			)6J003	EQU	110 PHASE ID			0110		GEN			
147			)6K003	EQU	700 LOAD NEXT PHASE			0700		GEN			
148			)6L003	EQU	704 TAPE READ INSTRUCTION			0704		GEN			
149			)6M003	EQU	728 TAPE ERROR HANDLER			0728		GEN			
			*							GEN			
150				ORG	201				0201				
151			PHAS36	BSS	)8J003,G	5	0201	B 257	G	GEN	2	257	
152				NOF	TO PATCH IN TRAPS FOR DEBUGGING	1	0206	N		GEN	2		
153			)0J003	EQU	*&1			0207		GEN			
154				LCA	)9J003,)6J003	7	0207	L 281	110	GEN	2	281	110
155				BCE	)1J003,)6K003,1 Q: LOADING FROM CARDS?	8	0214	B 250	700 1	GEN	2	250	700
156				BCE	)1J003,)6L003&4,0 Q: LOADING FROM AUTOCODER TAPE?	8	0222	B 250	708 0	GEN	2	250	708
157				RTW	1,LOADAD READ THE BLOCK	8	0230	L %U1	838 R	GEN	2	%U1	838
158				BER	)6M003 Q: TAPE ERROR?	5	0238	B 728	L	GEN	3	728	
159				CS	LOADNX,)9R003 ENTER THE BLOCK	7	0243	/ 700	287	GEN	3	700	287
160			)1J003	CS	)6K003,)9R003 LOAD CARDS OR AUTOCODER TAPE	7	0250	/ 700	287	GEN	3	700	287
161			)8J003	SW	)9R003	4	0257	,	287	GEN	3	287	
162				MU	%T0,)8K003,W	8	0261	M %T0	273 W	GEN	3	%T0	273
163				H	)0J003	4	0269	.	207	GEN	3	207	
164			)8K003	EQU	*&1			0273		GEN			
165			)9J003	DCW	@ARITH FOR@ PHASE ID	9	0281			GEN	4		
166				DCW	#1	1	0282			GEN	4		
167				DC	@36.1@ PHASE NUMBER	4	0286			GEN	4		
168			)9R003	DCW	@}@	1	0287			GEN	4		
169				XFR	PHAS36 WVS			B 201			5	201	
170			*										
171				ORG	BEGIN3				0838				
172			LOADAD	EQU	*&1			0838					
173	4	934	* START -		INITIALIZATION								
174	4	935	BEGN36	BCE	FENDX,X2,.	8	0838	B 700	094 .		6	700	094
175	4	936		SW	GM1	4	0846	,	K40		6	2240	
176	4	937		SBR	SAVX3#3,0&X3	7	0850	H R39	0?0		6	2939	000+3
177	4	938		SBR	X1,1&X1	7	0857	H 089	0 1		6	089	001+1
178	4	939		SBR	X2,1&X2	7	0864	H 094	0!1		6	094	001+2
179	4	940	* START OF		EVERY STATEMENT								
180	4	941	NUSTM	S	TBLR	4	0871	S N72			6	2572	
181	4	942		C	X2, SAVX3	7	0875	C 094	R39		7	094	2939
182	4	943		BE	FENDX	5	0882	B 700	S		7	700	
183	4	944		MCW	BLK4,MAXDL	7	0887	M ?18	R98		7	3018	2998
184	4	945		SBR	HEX1#3,0&X1	7	0894	H R42	0 0		7	2942	000+1
185	4	946	* START OF		EVERY DELTA STRING								
186	4	947	BLKOP	MCW	BLK4, HLDOP#1	7	0901	M ?18	R43		7	3018	2943
187	4	948	CWPRT	CW	PRTSW	4	0908	) R36			7	2936	
188	4	949		B	FIX X2 AT HIGH ORDER MINUS ONE	4	0912	B N73			8	2573	
189	4	950		BCE	DELT1,LEFT-2,< 12-6-8 X2 AT UNITS POS	8	0916	B 974	?34 <		8	974	3034
190	4	951	CKDL2	BCE	DELT2,RIGHT-2,< 12-6-8	8	0924	B /66	?59 <		8	1166	3059
191	4	952		BCE	OUTPT,1&X2,} GM	8	0932	B X33	0!1 } GMARK		8	1733	001+2
192	4	953		BW	BIG,PRTSW	8	0940	V T02	R36 1		8	1302	2936
193	4	954	ADD3	A	@I99@,CURDL#3	7	0948	A R46	R49		9	2946	2949
194	4	955		MCW	CURDL,X3	7	0955	M R49	099		9	2949	099

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
195	4	956		BCE	ADD3, TABLE&X3, 1	8		0962	B 948 KD1 1		9	948	2241+3
196	4	957		B	BLKOP	4		0970	B 901		9	901	
197	4	958	*	DELTA IS	LEFT OPERAND								
198	4	959	DELT1	BCE	CKDL2, OP, #	8		0974	B 924 ?37 #		9	924	3037
199	4	960		BCE	TUF, OP, .	8		0982	B T28 ?37 .		10	1328	3037
200	4	961		B	CVTDL	4		0990	B P58		10	2758	
201	4	962		DCW	LEFT	3		0996	?36		10	3036	
202	4	963	D2	B	GETDL	4		0997	B Q37		10	2837	
203	4	964		MN	&1, TABLE&X1	7		1001	D R50 KU1		10	2950	2241+1
204	4	965		LCA	0&X3, HLD35#35	7		1008	L 0?0 R85		10	000+3	2985
205	4	966		SAR	X1	4		1015	Q 089		10	089	
206	4	967	*	DELETE	TEMP								
207	4	968	CMP3	C	X1, X2	7		1019	C 089 094		11	089	094
208	4	969		BE	HLFT	5		1026	B  54 S		11	1054	
209	4	970		MVDWN	X1, X3					MACRO			
210				LCA	0&X1, 0&X3	7		1031	L 0 0 0?0	GEN	11	000+1	000+3
211				SAR	X1	4		1038	Q 089	GEN	11	089	
212				C	0&X3	4		1042	C 0?0	GEN	11	000+3	
213				SAR	X3	4		1046	Q 099	GEN	11	099	
214	4	971		B	CMP3	4		1050	B  19		11	1019	
215	4	972	*	X1 #	X2 UNITS POSN OF TEMP TO BE OPTIMIZED								
216	4	973	*	X3 #	UNITS OF INSERTION OF OPTIMIZED TEMP								
217	4	974	*	INSERT	TEMP IN STRING								
218	4	975	HLFT	C	0&X2	4		1054	C 0!0		12	000+2	
219	4	976		SAR	X1	4		1058	Q 089		12	089	
220	4	977		BW	CW2, PRTSW	8		1062	V R28 R36 1		12	2928	2936
221	4	978	CKRT	BCE	NORT, RIGHT, *	8		1070	B /01 ?61 *		12	1101	3061
222	4	979		BCE	FST1, OP, #	8		1078	B W95 ?37 #		12	1695	3037
223	4	980		LCA	RIGHT, 0&X3	7		1086	L ?61 0?0		12	3061	000+3
224	4	981		SBR	X3	4		1093	H 099		13	099	
225	4	982		CW	1&X3	4		1097	) 0?1		13	001+3	
226	4	983	NORT	LCA	OP, 0&X3	7		1101	L ?37 0?0		13	3037	000+3
227	4	984		SBR	X3	4		1108	H 099		13	099	
228	4	985		CW	1&X3	4		1112	) 0?1		13	001+3	
229	4	986		LCA	HLD35, 0&X3	7		1116	L R85 0?0		13	2985	000+3
230	4	987		SBR	X3	4		1123	H 099		13	099	
231	4	988		SBR	X2	4		1127	H 094		14	094	
232	4	989	*	SHIFT	REST OF STATEMENT								
233	4	990	LOAD2	LCA	0&X1, 0&X3	7		1131	L 0 0 0?0		14	000+1	000+3
234	4	991		SAR	X1	4		1138	Q 089		14	089	
235	4	992		C	0&X3	4		1142	C 0?0		14	000+3	
236	4	993		SAR	X3	4		1146	Q 099		14	099	
237	4	994		BCE	*&5, 1&X1, } GM	8		1150	B /62 0 1 } GMARK		14	1162	001+1
238	4	995		B	LOAD2	4		1158	B /31		14	1131	
239	4	996		B	BLKOP	4		1162	B 901		15	901	
240	4	997	*	DELTA IS	RIGHT OPERAND								
241	4	998	DELT2	BCE	*&5, HLDOP, BLANK	8		1166	B /78 R43		15	1178	2943
242	4	999		B	CANU	4		1174	B U96		15	1496	
243	5	000		BCE	FIRST, OP, #	8		1178	B W63 ?37 #		15	1663	3037
244	5	001		FBCEQ	COMUT, OP, &, *					MACRO			

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245				BCE	COMUT, OP, &	8		1186	B S14 ?37 &	GEN	15	1214	3037
246				BCE	COMUT, OP, *	8		1194	B S14 ?37 * GEN		16	1214	3037
247	5	002		BCE	NEGAT, OP, -	8		1202	B S39 ?37 -		16	1239	3037
248	5	003		B	CKND	4		1210	B V27		16	1527	
249	5	004	COMUT	LCA	LEFT, HLD35	7		1214	L ?36 R85		16	3036	2985
250	5	005		LCA	RIGHT, LEFT	7		1221	L ?61 ?36		16	3061	3036
251	5	006		LCA	HLD35, RIGHT	7		1228	L R85 ?61		17	2985	3061
252	5	007		B	DELT1	4		1235	B 974		17	974	
253	5	008	NEGAT	BW	KWM, PRTSW	8		1239	V T79 R36 1		17	1379	2936
254	5	009		LCA	LEFT, 0&X2	7		1247	L ?36 0!0		17	3036	000+2
255	5	010		LCA	@&@	4		1254	L R86		17	2986	
256	5	011		SBR	X2	4		1258	H 094		17	094	
257	5	012		CW	2&X2, XNEGTF	7		1262	) 0!2 123		18	002+2	123
258	5	013	NEG3	LCA	RIGHT, LEFT	7		1269	L ?61 ?36		18	3061	3036
259	5	014		LCA	@***@, RIGHT	7		1276	L R89 ?61		18	2989	3061
260	5	015		MCW	@N@, OP	7		1283	M R90 ?37		18	2990	3037
261	5	016		CW	XNEGTF	4		1290	) 123		18	123	
262	5	017		SW	PRTSW	4		1294	, R36		18	2936	
263	5	018		B	DELT1	4		1298	B 974		19	974	
264	5	019	* IN		THE MIDDLE OF PARTIALLY OPTIMIZED TEMP								
265	5	020	BIG	BCE	TUF, RIGHT, *	8		1302	B T28 ?61 *		19	1328	3061
266	5	021		MCW	OP, BCE1&7	7		1310	M ?37 T24		19	3037	1324
267	5	022	BCE1	BCE	MAYBE, @&-*@@, 0	8		1317	B T91 R94 0		19	1391	2994
268	5	023		CHAIN	3					MACRO			
269				BCE		1		1325	B	GEN	19		
270				BCE		1		1326	B	GEN	19		
271				BCE		1		1327	B	GEN	19		
272	5	024	TUF	BW	*&5, PRTSW	8		1328	V T40 R36 1		20	1340	2936
273	5	025		B	ADD3	4		1336	B 948		20	948	
274	5	026		B	KWM	4		1340	B T79		20	1379	
275	5	027	TUF2	BW	ADJST, 2&X2	8		1344	V T60 0!2 1		20	1360	002+2
276	5	028		SBR	X2	4		1352	H 094		20	094	
277	5	029		B	TUF2	4		1356	B T44		20	1344	
278	5	030	ADJST	SBR	X2, 1&X2	7		1360	H 094 0!1		20	094	001+2
279	5	031		BCE	OUTPT, 1&X2, }	8		1367	B X33 0!1 }	GMARK	21	1733	001+2
280	5	032		B	ADD3	4		1375	B 948		21	948	
281	5	033	KWM	SBR	KWMXT&3	4		1379	H T90		21	1390	
282	5	034		CW	1&X2	4		1383	) 0!1		21	001+2	
283	5	035	KWMXT	B	0	4		1387	B 000		21	000	
284	5	036	MAYBE	BCE	*&5, HLDOP, BLANK	8		1391	B U03 R43		21	1403	2943
285	5	037		B	ADNL	4		1399	B U40		21	1440	
286	5	038		MCW	OP, HLDOP	7		1403	M ?37 R43		22	3037	2943
287	5	039	MESUR	CW	1&X2	4		1410	) 0!1		22	001+2	
288	5	040		LCA	RIGHT, 0&X2	7		1414	L ?61 0!0		22	3061	000+2
289	5	041		SBR	X2	4		1421	H 094		22	094	
290	5	042		CW	MIDSW#1	4		1425	) R95		22	2995	
291	5	043		SBR	CW5&3, 1&X2	7		1429	H 017 0!1		22	2617	001+2
292	5	044		B	CWPRT	4		1436	B 908		22	908	
293	5	045	ADNL	FBCEQ	HOPE, HLDOP, &, -					MACRO			
294			ADNL	BCE	HOPE, HLDOP, &	8		1440	B U76 R43 &	GEN	23	1476	2943

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295				BCE	HOPE, HLDOP, -	8		1448	B U76 R43 -	GEN	23	1476	2943
296	5	046		FBCEQ	MESUR, OP, *, /					MACRO			
297				BCE	MESUR, OP, *	8		1456	B U10 ?37 *	GEN	23	1410	3037
298				BCE	MESUR, OP, /	8		1464	B U10 ?37 /	GEN	23	1410	3037
299	5	047		B	TUF	4		1472	B T28		23	1328	
300	5	048	HOPE	FBCEQ	MESUR, OP, &, -					MACRO			
301			HOPE	BCE	MESUR, OP, &	8		1476	B U10 ?37 &	GEN	24	1410	3037
302				BCE	MESUR, OP, -	8		1484	B U10 ?37 -	GEN	24	1410	3037
303	5	049		B	TUF	4		1492	B T28		24	1328	
304	5	050	*		DELTA FOUND IN MIDDLE OF LARGE STRING								
305	5	051	CANU	MCW	OP, *&8	7		1496	M ?37 V10		24	3037	1510
306	5	052		BCE	SWAP, HLDOP, 0	8		1503	B V75 R43 0		24	1575	2943
307	5	053		FBCEQ	HOPE2, HLDOP, &, -					MACRO			
308				BCE	HOPE2, HLDOP, &	8		1511	B V55 R43 &	GEN	25	1555	2943
309				BCE	HOPE2, HLDOP, -	8		1519	B V55 R43 -	GEN	25	1555	2943
310	5	054	CKND	BCE	OUTPT, 1&X2, } GM	8		1527	B X33 0!1 }	GMARK	25	1733	001+2
311	5	055		BW	TUF, PRTSW	8		1535	V T28 R36 1		25	1328	2936
312	5	056		BW	ADD3, 1&X2	8		1543	V 948 0!1 1		26	948	001+2
313	5	057		B	TUF	4		1551	B T28		26	1328	
314	5	058	HOPE2	FBCEQ	SWAP, OP, &, -					MACRO			
315			HOPE2	BCE	SWAP, OP, &	8		1555	B V75 ?37 &	GEN	26	1575	3037
316				BCE	SWAP, OP, -	8		1563	B V75 ?37 -	GEN	26	1575	3037
317	5	059		B	CKND	4		1571	B V27		26	1527	
318	5	060	*		SHIFT MIDDLE DELTA TO FRONT OF STRING								
319	5	061	SWAP	BCE	TUF, OP, @	8		1575	B T28 ?37 @		27	1328	3037
320	5	062		BW	KWM, PRTSW	8		1583	V T79 R36 1		27	1379	2936
321	5	063		C	0&X2, BLK4	7		1591	C 0!0 ?18		27	000+2	3018
322	5	064		SAR	X3	4		1598	Q 099		27	099	
323	5	065		MCW	0&X3, 0&X2	7		1602	M 0?0 0!0		27	000+3	000+2
324	5	066		SBR	X2	4		1609	H 094		27	094	
325	5	067		BCE	NEG2, OP, -	8		1613	B W44 ?37 -		28	1644	3037
326	5	068		MCW	OP, 0&X2	7		1621	M ?37 0!0		28	3037	000+2
327	5	069		MCW	RIGHT	4		1628	M ?61		28	3061	
328	5	070		C	0&X2	4		1632	C 0!0		28	000+2	
329	5	071		SBR	X2	4		1636	H 094		28	094	
330	5	072		B	BLKOP	4		1640	B 901		28	901	
331	5	073	NEG2	LCA	@&@, 0&X2	7		1644	L R86 0!0		28	2986	000+2
332	5	074		SBR	X2	4		1651	H 094		29	094	
333	5	075		SW	PRTSW	4		1655	, R36		29	2936	
334	5	076		B	NEG3	4		1659	B S69		29	1269	
335	5	077	FIRST	B	CVTDL	4		1663	B P58		29	2758	
336	5	078		DCW	RIGHT	3		1669	?61		29	3061	
337	5	079		MCW	RIGHT, MAXDL#3	7		1670	M ?61 R98		29	3061	2998
338	5	080		MCW	CVT3, CURDL	7		1677	M ?64 R49		29	3064	2949
339	5	081		A	&1, CURDL	7		1684	A R50 R49		30	2950	2949
340	5	082		B	D2	4		1691	B 997		30	997	
341	5	083	FST1	LCA	HLD35, 0&X3	7		1695	L R85 0?0		30	2985	000+3
342	5	084		SBR	X2	4		1702	H 094		30	094	
343	5	085		LCA	OP	4		1706	L ?37		30	3037	
344	5	086		SBR	X3	4		1710	H 099		30	099	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
345	5	087		CW	1&X3	4		1714	) 0?1		30	001+3	
346	5	088		LCA	LEFT,0&X3	7		1718	L ?36 0?0		31	3036	000+3
347	5	089		LCA	GM1	4		1725	L K40		31	2240	
348	5	090		B	BLKOP	4		1729	B 901		31	901	
349	5	091	*	ALL	OPTIMIZATION HAS TAKEN PLACE - OUTPUT STATEMENT								
350			*										
351			*	TAPE	BLOCK IS TOO BIG FOR CHM TAU EMULATOR								
352			*										
353			END1	DCW	@}@	1		1733		GMARK	31		
354				XFR	LOADNX LOAD THIS				B 700		32	700	
355			PART2	LDPH	,OUTPT,BEGN36,,,36.2 LOAD PART2 AND START IN PART 1					MACRO			
			*	PHAZ	LDPH [PHASID],LOADAD,ENTAD[,SKIPFG,SKIP],[NUMBER][,HALT]					GEN			
			*	XFR	PHASZ PROHIBITED IN A MACRO					GEN			
			*							GEN			
			*	LOAD	A BLOCK					GEN			
			*							GEN			
356			)6K011	EQU	700 LOAD NEXT PHASE			0700		GEN			
357			)6L011	EQU	704 TAPE READ INSTRUCTION			0704		GEN			
358			)6M011	EQU	728 TAPE ERROR HANDLER			0728		GEN			
			*							GEN			
359				ORG	201				0201				
360			PART2	BSS	)8J011,G	5		0201	B 250 G	GEN	33	250	
361				NOP	TO PATCH IN TRAPS FOR DEBUGGING	1		0206	N	GEN	33		
362			)0J011	EQU	*&1			0207		GEN			
363				BCE	)1J011,)6K011,1 Q: LOADING FROM CARDS?	8		0207	B 243 700 1	GEN	33	243	700
364				BCE	)1J011,)6L011&4,0 Q: LOADING FROM AUTOCODER TAPE?	8		0215	B 243 708 0	GEN	33	243	708
365				RTW	1,OUTPT READ THE BLOCK	8		0223	L %U1 X33 R	GEN	33	%U1	1733
366				BER	)6M011 Q: TAPE ERROR?	5		0231	B 728 L	GEN	33	728	
367				CS	BEGN36,)9R011 ENTER THE BLOCK	7		0236	/ 838 271	GEN	34	838	271
368			)1J011	CS	)6K011,)9R011 LOAD CARDS OR AUTOCODER TAPE	7		0243	/ 700 271	GEN	34	700	271
369			)8J011	SW	)9R011	4		0250	, 271	GEN	34	271	
370				MU	%T0,)8K011,W	8		0254	M %T0 266 W	GEN	34	%T0	266
371				H	)0J011	4		0262	. 207	GEN	34	207	
372			)8K011	EQU	*&1			0266		GEN			
373				DCW	#1	1		0266		GEN	34		
374				DC	@36.2@ PHASE NUMBER	4		0270		GEN	34		
375			)9R011	DCW	@}@	1		0271		GEN	34		
376				XFR	PART2				B 201		35	201	
377				ORG	END1				1733				
378			*										
379	5	092	OUTPT	MCW	HEX1,X1	7		1733	M R42 089		36	2942	089
380	5	093		SBR	HEX2#3,0&X2	7		1740	H ?01 0!0		36	3001	000+2
381	5	094		BCE	NOPTM,2&X2,, IF STATEMENT	8		1747	B Y87 0!2 ,		36	1887	002+2
382	5	095		BCE	NOPTM,MAXDL-2,< 12-6-8	8		1755	B Y87 R96 <		36	1887	2996
383	5	096		BCE	NOPTM,0&X2,\$	8		1763	B Y87 0!0 \$		36	1887	000+2
384	5	097		BCE	NOPTM,BOP,\$	8		1771	B Y87 ?36 \$		37	1887	3036
385	5	098		BWZ	CKFIX,BOP-1,K	8		1779	V Y07 ?35 K		37	1807	3035
386	5	099		BWZ	NOPTM,AOP-1,K	8		1787	V Y87 ?60 K		37	1887	3060
387	5	100		BWZ	NOPTM,AOP-1,S	8		1795	V Y87 ?60 S		37	1887	3060
388	5	101		B	OPTM	4		1803	B Y23		37	1823	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
389	5	102	CKFIX	BWZ	NOPTM,AOP-1,2	8		1807	V Y87 ?60 2		38	1887	3060
390	5	103		BWZ	NOPTM,AOP-1,B	8		1815	V Y87 ?60 B		38	1887	3060
391	5	104	*	GENERATE	INLINE CODING								
392	5	105	OPTM	B	NOPTM	4		1823	B Y87		38	1887	
393	5	106		LCA	BOP	4		1827	L ?36		38	3036	
394	5	107		LCA	AOP	4		1831	L ?61		38	3061	
395	5	108		LCA	@L@	4		1835	L ?02		38	3002	
396	5	109		SBR	X3	4		1839	H 099		38	099	
397	5	110		CW	2&X3,5&X3	7		1843	) 0?2 0?5		39	002+3	005+3
398	5	111		MZ	*-4,3&X3	7		1850	Y Y52 0?3		39	1852	003+3
399	5	112		MZ	*-4,6&X3	7		1857	Y Y59 0?6		39	1859	006+3
400	5	113		SBR	X1,6&X1	7		1864	H 089 0 6		39	089	006+1
401	5	114		LCA	6&X2	4		1871	L 0!6		39	006+2	
402	5	115		LCA		1		1875	L		39		
403	5	116		SBR	X2,6&X2	7		1876	H 094 0!6		40	094	006+2
404	5	117		B	NUSTM	4		1883	B 871		40	871	
405	5	118	*	CANNOT	GENERATE INLINE CODING								
406	5	119	NOPTM	MCW	@01@,MAXDL	7		1887	M ?04 R98		40	3004	2998
407	5	120		MCW	@001@,X3	7		1894	M ?07 099		40	3007	099
408	5	121		MCW	@01@,DL2#2	7		1901	M ?04 ?09		40	3004	3009
409	5	122		SBR	X1,4&X1	7		1908	H 089 0 4		40	089	004+1
410	5	123		LCA	BARITH	4		1915	L ?72		41	3072	
411	5	124	CKZRO	BCE	PRODL,TABLE&X3,0	8		1919	B Z63 KD1 0		41	1963	2241+3
412	5	125	DECR	A	&1,DL2	7		1927	A R50 ?09		41	2950	3009
413	5	126		MCW	DL2,MAXDL	7		1934	M ?09 R98		41	3009	2998
414	5	127		MZ	DL2-1,MAXDL	7		1941	Y ?08 R98		41	3008	2998
415	5	128		A	&1,X3	7		1948	A R50 099		42	2950	099
416	5	129		SW	PRTSW	4		1955	, R36		42	2936	
417	5	130		B	CKZRO	4		1959	B Z19		42	1919	
418	5	131	PRODL	LCA	@#@,4&X1	7		1963	L ?10 0 4		42	3010	004+1
419	5	132		LCA	MAXDL	4		1970	L R98		42	2998	
420	5	133		CW	4&X1	4		1974	) 0 4		42	004+1	
421	5	134		C	0&X1,BARITH	7		1978	C 0 0 ?72		42	000+1	3072
422	5	135		BE	*&5	5		1985	B Z94 S		43	1994	
423	5	136		CW	1&X1	4		1990	) 0 1		43	001+1	
424	5	137		LCA	GM1,1&X2	7		1994	L K40 0!1		43	2240	001+2
425	5	138	CX2	C	0&X2	4		2001	C 0!0		43	000+2	
426	5	139		SAR	X2	4		2005	Q 094		43	094	
427	5	140		BCE	KWM2,0&X2,#	8		2009	B J39 0!0 #		43	2139	000+2
428	5	141		BCE	SUB3,1&X2,\$	8		2017	B J47 0!1 \$		44	2147	001+2
429	5	142		MZ	2&X2,2&X1	7		2025	Y 0!2 0 2		44	002+2	002+1
430	5	143	BMPX1	SBR	X1,4&X1	7		2032	H 089 0 4		44	089	004+1
431	5	144	*	STRING TO	OUTPUT AREA								
432	5	145	PMOV	MCM	1&X2,1&X1	7		2039	P 0!1 0 1		44	001+2	001+1
433	5	146		MN		1		2046	D		44		
434	5	147		SBR	X1	4		2047	H 089		44	089	
435	5	148		MCM	1&X2	4		2051	P 0!1		44	001+2	
436	5	149		MN		1		2055	D		45		
437	5	150		SAR	X2	4		2056	Q 094		45	094	
438	5	151		BCE	PMOV,0&X2,	8		2060	B !39 0!0		45	2039	000+2

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
439	5	152		C	0&X2	4		2068	C 0!0		45	000+2	
440	5	153		SAR	X2	4		2072	Q 094		45	094	
441	5	154		MCW	X3,HEX3#3	7		2076	M 099 ?13		45	099	3013
442	5	155		MCW	@ @,0&X1	7		2083	M ?14 0 0		45	3014	000+1
443	5	156		LCA	0&X2	4		2090	L 0!0		46	000+2	
444	5	157		SBR	X3	4		2094	H 099		46	099	
445	5	158		CW	0&X1,1&X3	7		2098	) 0 0 0?1		46	000+1	001+3
446	5	159		C	0&X2	4		2105	C 0!0		46	000+2	
447	5	160		SAR	X3	4		2109	Q 099		46	099	
448	5	161		BCE	EOSTR,0&X3,}	8		2113	B J58 0?0 } GMARK		46	2158	000+3
449	5	162		SBR	X2,0&X3	7		2121	H 094 0?0		46	094	000+3
450	5	163		MCW	HEX3,X3	7		2128	M ?13 099		47	3013	099
451	5	164		B	DECR	4		2135	B Z27		47	1927	
452	5	165	KWM2	CW	1&X2	4		2139	) 0!1		47	001+2	
453	5	166		B	CX2	4		2143	B !01		47	2001	
454	5	167	SUB3	MZ	3&X2,2&X1	7		2147	Y 0!3 0 2		47	003+2	002+1
455	5	168		B	BMPX1	4		2154	B !32		47	2032	
456	5	169		* ALL	OF STATEMENT TO OUTPUT AREA								
457	5	170	EOSTR	C	0&X1,BLK4#4	7		2158	C 0 0 ?18		47	000+1	3018
458	5	171		SAR	X1	4		2165	Q 089		48	089	
459	5	172		LCA	@ @,0&X1	7		2169	L ?14 0 0		48	3014	000+1
460	5	173		MCW	0&X2	4		2176	M 0!0		48	000+2	
461	5	174		MCW	HEX2,X2	7		2180	M ?01 094		48	3001	094
462	5	175		BW	DOCOD,6&X2	8		2187	V K17 0!6 1		48	2217	006+2
463	5	176		SW	3&X2	4		2195	, 0!3		48	003+2	
464	5	177		SBR	X1,9&X1	7		2199	H 089 0 9		49	089	009+1
465	5	178		LCA	11&X2	4		2206	L 0J1		49	011+2	
466	5	179		SBR	X2,11&X2	7		2210	H 094 0J1		49	094	011+2
467	5	180	DOCOD	SBR	X1,6&X1	7		2217	H 089 0 6		49	089	006+1
468	5	181		LCA	6&X2	4		2224	L 0!6		49	006+2	
469	5	182		LCA		1		2228	L		49		
470	5	183		SBR	X2,6&X2	7		2229	H 094 0!6		49	094	006+2
471	5	184		B	NUSTM	4		2236	B 871		50	871	
472	5	185	GM1	DC	@)@	1		2240		GMARK	50		
473	5	186	TABLE	DA	1X332,C			2241	2572		50		
474	5	187	TBLR	EQU	*			2572					
475	5	188		* GETS	OPERAND LEFT, OPERATOR, OPERAND RIGHT								
476	5	189	FIX	SBR	FIXT&3	4		2573	H P27		58	2727	
477	5	190		BCE	SUB1,1&X2,\$	8		2577	B P28 0!1 \$		59	2728	001+2
478	5	191		LCA	3&X2,LEFT#18	7		2585	L 0!3 ?36		59	003+2	3036
479	5	192		MCW	4&X2,OP#1	7		2592	M 0!4 ?37		59	004+2	3037
480	5	193		SBR	X2,4&X2	7		2599	H 094 0!4		59	094	004+2
481	5	194		BW	*&5,MIDSW	8		2606	V 018 R95 1		59	2618	2995
482	5	195	CW5	CW	0	4		2614	) 000		60	000	
483	5	196		SW	MIDSW	4		2618	, R95		60	2995	
484	5	197		BW	UNARY,1&X2	8		2622	V 072 0!1 1		60	2672	001+2
485	5	198		SW	1&X2	4		2630	, 0!1		60	001+2	
486	5	199		SBR	CW&3,1&X2	7		2634	H P23 0!1		60	2723	001+2
487	5	200		MN	0&X2,BCE3&7	7		2641	D 0!0 062		60	000+2	2662
488	5	201		MZ	0&X2,BCE3&7	7		2648	Y 0!0 062		61	000+2	2662



SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
489	5	202	BCE3	BCE	ISTWO,@&-*@.#@,0	8		2655	B 083 ?43 0		61	2683	3043
490	5	203		CHAIN	5					MACRO			
491				BCE		1		2663	B	GEN	61		
492				BCE		1		2664	B	GEN	61		
493				BCE		1		2665	B	GEN	61		
494				BCE		1		2666	B	GEN	61		
495				BCE		1		2667	B	GEN	61		
496	5	204		SW	PRTSW	4		2668	, R36		62	2936	
497	5	205	UNARY	LCA	@***@,RIGHT	7		2672	L R89 ?61		62	2989	3061
498	5	206		B	FIXT	4		2679	B P24		62	2724	
499	5	207	ISTWO	BCE	SUB1,1&X2,\$	8		2683	B P28 0!1 \$		62	2728	001+2
500	5	208		LCA	3&X2,RIGHT#18	7		2691	L 0!3 ?61		62	003+2	3061
501	5	209		SBR	X2,3&X2	7		2698	H 094 0!3		62	094	003+2
502	5	210		BW	CW,1&X2	8		2705	V P20 0!1 1		63	2720	001+2
503	5	211		SW	1&X2,PRTSW	7		2713	, 0!1 R36		63	001+2	2936
504	5	212	CW	CW	0	4		2720	) 000		63	000	
505	5	213	FIXT	B	0	4		2724	B 000		63	000	
506	5	214	SUB1	SBR	SUBXT&3	4		2728	H P57		63	2757	
507	5	215		SBR	X2,8&X2	7		2732	H 094 0!8		63	094	008+2
508	5	216		BCE	SUBXT,3&X2,\$	8		2739	B P54 0!3 \$		64	2754	003+2
509	5	217		SBR	X2,6&X2	7		2747	H 094 0!6		64	094	006+2
510	5	218		SUBXT	B 0	4		2754	B 000		64	000	
511	5	219	*	CONVERTS	ANY DELTA NUMBER TO THREE CHARACTERS								
512	5	220	CVTDL	SBR	X1	4		2758	H 089		64	089	
513	5	221		SBR	CVTXT&3,3&X1	7		2762	H Q36 0 3		64	2836	003+1
514	5	222		MCW	2&X1,X1	7		2769	M 0 2 089		64	002+1	089
515	5	223		MN	0&X1,CVT3#3	7		2776	D 0 0 ?64		65	000+1	3064
516	5	224		MN		1		2783	D		65		
517	5	225		MCW	@0@	4		2784	M ?65		65	3065	
518	5	226		BWZ	CVTXT,0&X1,2	8		2788	V Q33 0 0 2		65	2833	000+1
519	5	227		A	&100,CVT3	7		2796	A ?68 ?64		65	3068	3064
520	5	228		BWZ	CVTXT,0&X1,S	8		2803	V Q33 0 0 S		65	2833	000+1
521	5	229		A	&100,CVT3	7		2811	A ?68 ?64		66	3068	3064
522	5	230		BWZ	CVTXT,0&X1,K	8		2818	V Q33 0 0 K		66	2833	000+1
523	5	231		A	&100,CVT3	7		2826	A ?68 ?64		66	3068	3064
524	5	232	CVTXT	B	0	4		2833	B 000		66	000	
525	5	233	*	FINDS TEMP	TO BE OPTIMIZED								
526	5	234	GETDL	SBR	GDLXT&3	4		2837	H Q73		66	2873	
527	5	235		SBR	X3,0&X2	7		2841	H 099 0!0		66	099	000+2
528	5	236		MCW	CURDL,X1	7		2848	M R49 089		67	2949	089
529	5	237		BW	GETWM,PRTSW	8		2855	V Q90 R36 1		67	2890	2936
530	5	238	CMP2	C	X1,CVT3	7		2863	C 089 ?64		67	089	3064
531	5	239	GDLXT	BE	0	5		2870	B 000 S		67	000	
532	5	240		BCE	ADD1,TABLE&X1,1	8		2875	B R17 KU1 1		67	2917	2241+1
533	5	241		A	@I99@,X1	7		2883	A R46 089		68	2946	089
534	5	242	GETWM	BW	GOTWM,2&X3	8		2890	V R06 0?2 1		68	2906	002+3
535	5	243		SBR	X3	4		2898	H 099		68	099	
536	5	244		B	GETWM	4		2902	B Q90		68	2890	
537	5	245	GOTWM	SBR	X3,1&X3	7		2906	H 099 0?1		68	099	001+3
538	5	246		B	CMP2	4		2913	B Q63		68	2863	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
539	5	247	ADD1	A	@I99@,X1	7		2917	A R46 089		69	2946	089
540	5	248		B	CMP2	4		2924	B Q63		69	2863	
541	5	249	CW2	CW	1&X3	4		2928	) 0?1		69	001+3	
542	5	250		B	CKRT	4		2932	B  70		69	1070	
543	5	251	PRTSW	DC	#1	1		2936			69		
544	5	252	FENDX	EQU	LOADNX			0700					
545	5	253		LTORG	*				2937				
			SAVX3	DCW	#03	3		2939		AREA	69		
			HEX1	DCW	#03	3		2942		AREA	69		
			HLDOP	DCW	#01	1		2943		AREA	69		
				DCW	@I99@	3		2946		LIT	70		
			CURDL	DCW	#03	3		2949		AREA	70		
				DCW	&1	1		2950		LIT	70		
			HLD35	DCW	#35	35		2985		AREA	71		
				DCW	@&@	1		2986		LIT	71		
				DCW	@***@	3		2989		LIT	71		
				DCW	@N@	1		2990		LIT	72		
				DCW	@&-*@@	4		2994		LIT	72		
			MIDSW	DCW	#01	1		2995		AREA	72		
			MAXDL	DCW	#03	3		2998		AREA	72		
			HEX2	DCW	#03	3		3001		AREA	72		
				DCW	@L@	1		3002		LIT	72		
				DCW	@01@	2		3004		LIT	72		
				DCW	@001@	3		3007		LIT	73		
			DL2	DCW	#02	2		3009		AREA	73		
				DCW	@#@	1		3010		LIT	73		
			HEX3	DCW	#03	3		3013		AREA	73		
				DCW	@ @	1		3014		LIT	73		
			BLK4	DCW	#04	4		3018		AREA	73		
			LEFT	DCW	#18	18		3036		AREA	73		
			OP	DCW	#01	1		3037		AREA	74		
				DCW	@&-*@.#@	6		3043		LIT	74		
			RIGHT	DCW	#18	18		3061		AREA	74		
			CVT3	DCW	#03	3		3064		AREA	74		
				DCW	@0@	1		3065		LIT	74		
				DCW	&100	3		3068		LIT	74		
546			*		WVS								
547			* RUNTIME ADDRESS		WVS								
548			*		WVS								
549			ARITF	EQU	700			0700					
550				B		1		3069	B		74		
551			BARITH	DC	ARITF	3		3072	700		74	700	
552	5	254	AOP	EQU	RIGHT			3061					
553	5	255	BOP	EQU	LEFT			3036					
554	5	256	SYSGM	DCW	@}@	1		3073		GMARK	75		
555	5	257		ORG	*&50				3124				
556	*5	258	NDRITH	EQU	*			3123					
557	5	259		XFR	BEGN36				B 838		76	838	
558			CLRME	CLRA	BEGN36,SYSGM,C					MACRO			
			*	CLRA	CLRBOT,CLRTOP[,SS,HERE,GWMAD]					GEN			

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
										GEN			
					* CLEAR CORE AFTER A PHASE USING THE CLRTOP ADDRESS					GEN			
										GEN			
559				ORG	201				0201				
										GEN			
					* CLEAR DOWN TO CLRBOT & X00 THE EASY WAY					GEN			
										GEN			
560			CLRME	EQU	*&1			0201		GEN			
561				BSS	SNAPSH,C	5		0201	B 333 C	GEN	77	333	
562			)0J012	CS	SYSGM CLEAR FROM CLRTOP	4		0206	/ ?73	GEN	77	3073	
563				SBR	)0J012&3	4		0210	H 209	GEN	77	209	
564				SBR	)0L012&6	4		0214	H 255	GEN	77	255	
565				C	)0J012&3,)0M012 DOWN TO CLRBOT & X00?	7		0218	C 209 266	GEN	77	209	266
566				BU	)0J012	5		0225	B 206 /	GEN	77	206	
										GEN			
					* NOW CLEAR DOWN TO CLRBOT THE HARD WAY					GEN			
										GEN			
567			)0K012	C	)0L012&6,)0N012	7		0230	C 255 269	GEN	77	255	269
568				BU	)0L012	5		0237	B 249 /	GEN	78	249	
569				CS	LOADNX,)0Q012 LOAD THE NEXT BLOCK AT 1	7		0242	/ 700 276	GEN	78	700	276
570			)0L012	LCA	)0P012,0-0 CLEAR WITH BLANK AND WORD MARK	7		0249	L 270 000	GEN	78	270	000
571				SBR	)0L012&6	4		0256	H 255	GEN	78	255	
572				B	)0K012	4		0260	B 230	GEN	78	230	
573			)0M012	DSA	)0R012 CLRBOT & X00 - 1	3		0266	899	GEN	78	899	
574			)0N012	DSA	BEGN36 CLRBOT	3		0269	838	GEN	78	838	
575			)0P012	DCW	#1	1		0270		GEN	79		
576				DC	@CLRA @ IDENTIFY IN A DECK, TAPE, OR DUMP	5		0275		GEN	79		
577			)0Q012	DCW	@}@	1		0276		GEN	79		
578				ORG	BEGN36&X00				0900				
579			)0R012	EQU	* CLRBOT & X00 - 1			0899		GEN			
580				XFR	CLRME WVS				B 201		80	201	

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
)0J003	0207: 0	)0J011	0207: 0	)0J012	0206: 0	)0K012	0230: 0	)0L012	0249: 0	)0M012	0266: 0
)0N012	0269: 0	)0P012	0270: 0	)0Q012	0276: 0	)0R012	0899: 0	)1J003	0250: 0	)1J011	0243: 0
)6J003	0110: 0	)6K003	0700: 0	)6K011	0700: 0	)6L003	0704: 0	)6L011	0704: 0	)6M003	0728: 0
)6M011	0728: 0	)8J003	0257: 0	)8J011	0250: 0	)8K003	0273: 0	)8K011	0266: 0	)9J003	0281: 0
)9R003	0287: 0	)9R011	0271: 0	ADD1	2917: 0	ADD3	0948: 0	ADJST	1360: 0	ADNL	1440: 0
AOP	3061: 0	ARITF	0700: 0	BARITH	3072: 0	BCE1	1317: 0	BCE3	2655: 0	BEGIN3	0838: 0
BEGN36	0838: 0	BIG	1302: 0	BLK4	3018: 0	BLKOP	0901: 0	BMPX1	2032: 0	BOP	3036: 0
CANU	1496: 0	CDOVLY	0700: 0	CKDL2	0924: 0	CKFIX	1807: 0	CKND	1527: 0	CKRT	1070: 0
CKZRO	1919: 0	CLRME	0201: 0	CMP2	2863: 0	CMP3	1019: 0	COMUT	1214: 0	CURDL	2949: 0
CVT3	3064: 0	CVTDL	2758: 0	CVTXT	2833: 0	CW	2720: 0	CW2	2928: 0	CW5	2614: 0
CWPRT	0908: 0	CX2	2001: 0	D2	0997: 0	DECR	1927: 0	DELT1	0974: 0	DELT2	1166: 0
DL2	3009: 0	DOCOD	2217: 0	END1	1733: 0	EOSTR	2158: 0	FENDX	0700: 0	FIRST	1663: 0
FIX	2573: 0	FIXT	2724: 0	FST1	1695: 0	GDLXT	2870: 0	GETDL	2837: 0	GETWM	2890: 0
GM1	2240: 0	GOTWM	2906: 0	HEX1	2942: 0	HEX2	3001: 0	HEX3	3013: 0	HLD35	2985: 0
HLDOP	2943: 0	HLFT	1054: 0	HOPE	1476: 0	HOPE2	1555: 0	ISTWO	2683: 0	KWM	1379: 0
KWM2	2139: 0	KWMXT	1387: 0	LEFT	3036: 0	LOAD2	1131: 0	LOADAD	0838: 0	LOADNX	0700: 0
MAXDL	2998: 0	MAYBE	1391: 0	MESUR	1410: 0	MIDSW	2995: 0	NDRITH	3123: 0	NEG2	1644: 0
NEG3	1269: 0	NEGAT	1239: 0	NOPTM	1887: 0	NORT	1101: 0	NUSTM	0871: 0	OP	3037: 0
OPTM	1823: 0	OUTPT	1733: 0	PART2	0201: 0	PHAS36	0201: 0	PHASLD	0381: 0	PMOV	2039: 0
PRODL	1963: 0	PRTSW	2936: 0	RIGHT	3061: 0	SAVX3	2939: 0	SAWNEG	0123: 0	SNAPEX	0564: 0
SNAPSH	0333: 0	SUB1	2728: 0	SUB3	2147: 0	SUBXT	2754: 0	SWAP	1575: 0	SYSGM	3073: 0
TABLE	2241: 0	TBLR	2572: 0	TOP3	2600: 0	TPERR	0728: 0	TPREAD	0704: 0	TUF	1328: 0
TUF2	1344: 0	UNARY	2672: 0	X1	0089: 0	X2	0094: 0	X3	0099: 0	XNEGTF	0123: 0

## UNREFERENCED SYMBOLS

CDOVLY NDRITH PHASLD SNAPEX TOP3 TPERR TPREAD